REMARKS

This Amendment is responsive to the Office Action dated September 10, 2007. Applicant has amended claims 1, 2, 4, 12, 18, 19, 21, 27, 29-31, 33-36, 38, and 51 and canceled claims 11, 28, 44, and 52. Claims 1-10, 12-27, 29-43, 45-51, and 53-59 are pending.

Claim Rejection Under 35 U.S.C. § 112

In the Office Action, claims 1-17 and 35-59 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

With respect to claim 1, the Office Action stated that "the medical device" and "a battery voltage" are inferentially included, rendering it unclear whether the elements are part of the claimed invention. Similarly, with regard to claim 51, the Office Action stated that "a battery voltage" is inferentially included, rendering it unclear whether the element is part of the claimed invention. While Applicant disagrees that independent claims 1 and 51 are unclear as to whether the medical device and battery voltage are a part of the claimed invention, Applicant has amended claims 1 and 51 as suggested by the Office Action in order to expedite prosecution.

With respect to independent claims 1 and 35, the Office Action stated that "inhibit pulse skipping" is vague because nothing has been set forth to provide pulse skipping.[1] Additionally, with respect to independent claims 1, 35, and 51, the Office Action stated that "level of the battery voltage" is vague because nothing has been set forth to measure battery voltage. Applicant respectfully disagrees with the Office Action and submits that claims 1-17 and 35-59 particularly point out and distinctly claim the subject matter which Applicant regards as the invention, as required by 35 U.S.C. § 112, second paragraph.

M.P.E.P. § 2171 provides guidance as to the requirements of 35 U.S.C. § 112, second paragraph, and states that a claim is definite when "the scope of the claim is clear to a hypothetical person possessing the ordinary level of skill in the pertinent art." The scope of each of independent claims 1, 35, and 51 is clear.

Applicant's independent claim 1 recites a control circuit to inhibit pulse skipping by the boost converter. Similarly, independent claim 35 recites means for inhibiting pulse skipping by

[1] Office Action dated 9/10/07, page 2, item 2.

the boost converter. In view of the language, "pulse skipping by the boost converter" recited in independent claims 1 and 35, it is unclear how claims 1 and 35 are vague with respect to the source of the pulse skipping, as the Office Action asserts. Applicant submits that it is clear that the boost converter provides the pulse skipping recited in claims 1 and 35. Accordingly, Applicant's claims 1 and 35 define pulse skip inhibition with, at a minimum, a reasonable degree of particularity and distinctness.[2]

The Office Action also found that independent claims 1, 35, and 51 are unclear because the claims recite a "level of the battery voltage", but "nothing has been set forth to . . . measure a battery voltage."[3] Amended claims 1 and 51 each recite a control circuit to inhibit pulse skipping by the boost converter when a level of the battery voltage exceeds a threshold voltage. Similarly, independent claim 35 recites means for inhibiting pulse skipping by the boost converter when a level of the battery voltage exceeds a threshold voltage. Applicant submits that independent claims 1, 35, and 51 as amended are clear, regardless of whether the source of the battery voltage measurement is set forth.

The intention of claims 1 and 51 is not to claim a device for measuring battery voltage, but instead to claim a control circuit that inhibits pulse skipping based on a variable, i.e., battery voltage. Likewise, claim 35 claims means for inhibiting pulse skipping by the boost converter based on a variable, i.e., battery voltage. Regardless of the source of the battery voltage measurement, the control circuit or means for inhibiting inhibits pulse skipping in response to the battery voltage level at the input of the boost converter. A hypothetical person possessing the ordinary level of skill in the pertinent art would understand the scope of independent claims 1, 35, and 51 as particularly pointing out and distinctly claiming a control circuit or means for inhibiting that inhibits pulse skipping when a level of the battery voltage exceeds a threshold voltage, irrespective of the source of the battery voltage measurement. Applicant notes that claim 59, which depends from claim 1, recites a battery voltage monitor.

For at least the foregoing reasons, Applicant's claims particularly point out and distinctly claim the subject matter which Applicant regards as the invention, as required by 35 U.S.C. § 112. Applicant requests withdrawal of all rejections under 35 U.S.C. § 112.

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[2] M.P.E.P. § 2173.02 provides that that in order to meet the requirements of 35 U.S.C. § 112, second paragraph, a claim must define the patentable subject matter with a reasonable degree of particularity and distinctness.
[3] Office Action dated 9/10/07, page 2, item 2.

Claim Rejection Under 35 U.S.C. § 102(e)

In the Office Action, claims 1, 2, 10, 11, 14, 17-19, 27, 28, 31, 34-36, 43, 44, 47, 50 and 59 were rejected under 35 U.S.C. § 102(e) as being anticipated by Lebel et al. (U.S. Patent Application Publication No. 2003/0065370, hereinafter referred to as "Lebel"). Applicant respectfully traverses the rejection to the extent such rejection may be considered applicable to the amended claims. Lebel fails to disclose each and every feature of the claimed invention, as required by 35 U.S.C. § 102(e), and provides no teaching that would have suggested the desirability of modification to include such features.

For example, with respect to independent claim 1 as amended, Lebel fails to disclose or suggest a boost converter adapted to convert a battery voltage to an operating voltage for a programmer and a control circuit adapted to inhibit pulse skipping by the boost converter when a level of the battery voltage exceeds a threshold voltage. In support of the rejection of claims 1, 18 and 35, the Office Action characterized the up-converter 734 in Lebel as a boost converter, and found that Lebel also discloses a control circuit that deactivates the up-converter when the battery voltage falls below a threshold, thus meeting the limitation of "pulse skipping" because no pulses are provided.[4] Applicant respectfully disagrees.

Lebel describes a main battery that supplies a main battery voltage signal to a DC-DC up-converter to produce a boosted voltage signal.[5] When the main battery voltage signal falls below a threshold, the main battery and the up-converter coupled to the main battery are deactivated and the back-up battery is activated.[6] According to the Office Action, the deactivation of the up-converter in Lebel results in pulse skipping by a boost converter.[7] However, deactivation of the up-converter does not result in pulse skipping by the up-converter. If the up-converter is deactivated indefinitely, as apparently disclosed by Lebel, it is unclear how the up-converter may skip a pulse. Furthermore, even if deactivation of the up-converter in Lebel amounts to pulse skipping, Lebel does not disclose or suggest a control circuit that inhibits pulse skipping when a level of the battery voltage exceeds a threshold voltage, as required by claim 1. Rather, Lebel

[4] *Id.* at page 3, item 5.
[5] Lebel at paragraph [0235].
[6] *Id.* at paragraphs [0237] and [0245].
[7] Office Action dated 9/10/07, page 3, item 5.

deactivates the up-converter when the main battery voltage falls below a threshold. Lebel fails to disclose or suggest each and every element of claim 1.

For similar reasons discussed above with respect to independent claim 1, Lebel fails to disclose or suggest each and every element of independent claims 18 and 35. For example, Lebel fails to disclose or suggest means for applying a battery voltage to a boost converter to convert the battery voltage to an operating voltage for the programmer and means for inhibiting pulse skipping by the boost converter when a level of the battery voltage exceeds a threshold voltage, as recited by claim 35.

Independent claims 1, 18, and 35 as amended recite limitations previously-presented in dependent claims 11, 28 and 44, respectively, which are now canceled. In support of the rejection of dependent claims 11, 28, and 44, the Office Action found that paragraph [0245] of Lebel discloses a device that inhibits pulse skipping when the battery voltage is above a threshold.[8] However, at paragraph [0245], Lebel describes deactivation of an up-converter when a main battery voltage signal falls below a threshold. In particular, at paragraph [0245], Lebel states that "[s]ince the high reset signal 556 is asserted by VAA [main battery voltage signal] falling below a threshold value . . . will cause voltage up conversion by module 734 to cease . . . ."[9] Thus, Lebel discloses a system in which an up-converter (i.e., the module 734) is activated to provide pulses when the main battery voltage signal exceeds a threshold. Lebel does not disclose or suggest that pulse skipping is inhibited when the up-converter is active. Accordingly, Lebel cannot disclose a control circuit or means for inhibiting that inhibit pulse skipping when a level of the battery voltage exceeds a threshold voltage, as recited by claims 1 and 35, respectively, or a method including inhibiting pulse skipping when a level of a battery voltage exceeds a threshold voltage, as recited by claim 18.

Lebel also fails to disclose or suggest each and every limitation of Applicant's dependent claims 2-10, 12-17, 19-27, 29-34, 36-43, and 45-50. For example, as described above, deactivating an up-converter does not amount to pulse skipping, as suggested by the Office Action.[10] In addition, Lebel fails to disclose or suggest activating pulse skipping when the operating voltage exceeds a reference voltage, as recited by amended dependent claims 2, 19 and

[8] *Id.* at page 4, item 8.
[9] Emphasis added.
[10] Office Action dated 9/10/07, page 3, item 5.

36. The Office Action characterized the reset signal 556 in Lebel as an operating voltage on the basis that the reset signal 556 is a voltage at least indirectly provided by the up-converter, which powers the device.[11] Applicant disagrees that the reset signal 556 is an operating voltage. Lebel discloses that a comparator (an integrated circuit) monitors the voltage signal of the main battery.[12] The high reset signal 556 is output from the comparator, and is sent to the processor as a power-fail interrupt signal.[13] Thus, the high reset signal 556 is not provided by the up-converter, but, rather, is determined based on the main battery voltage signal, i.e., the signal that is inputted into the up-converter to generate the operating voltage. Accordingly, even if Lebel discloses pulse skipping, Lebel fails to disclose or suggest activating pulse skipping when the operating voltage exceeds a reference voltage.

For at least these reasons, the Office Action has failed to establish a prima facie case for anticipation of Applicant's claims 1, 2, 10, 11, 14, 17-19, 27, 28, 31, 34-36, 43, 44, 47, 50 and 59 under 35 U.S.C. § 102(c). Withdrawal of this rejection is requested.

Claim Rejection Under 35 U.S.C. § 103

In the Office Action, claims 1-59 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kotowski et al. (U.S. Patent No. 6,055,168, hereinafter referred to as "Kotowski") in view of Lebel. Applicant respectfully traverses the rejection to the extent such rejections may be considered applicable to the claims as amended. The applied references fail to disclose or suggest the inventions defined by Applicant's claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed invention.

For example, Kotowski in view of Lebel fails to disclose or suggest a programmer for a medical device, the programmer comprising a wireless telemetry circuit adapted to communicate with the medical device, a boost converter adapted to convert a battery voltage to an operating voltage for the programmer, and a control circuit to inhibit pulse skipping by the boost converter when a level of the battery voltage exceeds a threshold voltage, as recited by Applicant's independent claim 1.

[11] *Id.* at page 3, item 6.
[12] Lebel at paragraph [0243].
[13] *Id.*

In support of the rejection of independent claims 1, 18, 35 and 51, the Office Action stated that Kotowski discloses a boost converter to convert a battery voltage to an operation voltage and a control circuit to inhibit pulse skipping by the boost converter based on a level of the battery voltage. The Office Action also reasoned that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kotowski's invention by providing the voltage converter to a handheld programmer having an internal antenna in combination with a neurostimulator because Lebel teaches a handheld programmer that utilizes a boost converter.[14]

Kotowski describes a switched capacitor circuit that receives an unregulated voltage (e.g., from a battery) and outputs a regulated voltage to an electronic device or load.[15] The gain of the switched capacitor circuit is selected based on a desired output voltage or load current and must also be greater than a minimum gain needed to ensure that the desired output voltage is met or exceeded.[16] The minimum gain is determined from the input voltage of the switched capacitor circuit.[17] The Office Action found that because the input voltage is used to select the minimum gain and the minimum gain is used to inhibit pulse skipping, the disclosed pulse skipping is based on a level of the battery voltage.[18] Applicant disagrees with this analysis. For example, the minimum gain is not used to inhibit pulse skipping by the switched capacitor circuit.

In Kotowski, a comparator compares the output voltage of the switched capacitor circuit to the desired output.[19] If the output voltage is less than the desired output, the comparator sends a "pump" signal to the switched capacitor circuit to indicate that more current is needed.[20] In response to receiving the "pump" signal, the switched capacitor circuit maintains the frequency of clock pulses, i.e., does not pulse skip.[21] If the output voltage is greater than or equal to the desired output, the comparator sends a skip signal to the switched capacitor circuit to indicate that the output voltage is sufficient and the switched capacitor circuit should not transfer anymore charge to the output, i.e., the switched capacitor circuit should skip a clock pulse.[22]

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[14] Office Action dated 9/10/07, page 5, item 15.
[15] Kotowski at col. 3, ll. 10-19.
[16] *Id.* at col. 3, l. 9 to col. 4, l. 8.
[17] *Id.* at col. 3, l. 9 to col. 4, l. 8.
[18] Office Action dated 9/10/07, page 5, item 15.
[19] Kotowski at col. 3, ll. 36-55.
[20] *Id.* at col. 3, ll. 26-30.
[21] *Id.*
[22] *Id.* at col. 3, ll. 19-35.

Thus, if the output voltage of the switched capacitor circuit exceeds a threshold, the switched capacitor activates pulse skipping. In contrast, claim 1 requires a control circuit that inhibits pulse skipping when a level of the battery voltage exceeds a threshold.

In Kotowski, a filter monitors the number of pulse and skip signals and adjusts the gain of the switched capacitor circuit based on the trend of the output voltages.[23] For example, if a consecutive number of "pump" signals are detected, the gain is increased. Likewise, if a consecutive number of "skip" signals are detected, the gain is decreased. Based on the Kotowski disclosure, it is clear that Kotowski discloses a system in which the gain setting is selected based on the output voltage (e.g., the difference between the output voltage and the desired output) of the switched capacitor circuit, rather than the input voltage, as suggested by the Office Action. The input voltage is only used to determine a minimum gain, and pulse skipping is not inhibited based on the minimum gain. Accordingly, Kotowski does not disclose inhibiting pulse skipping when a level of the battery voltage exceeds a threshold voltage.

As previously described, independent claim 1 as amended recites limitations previously-presented in dependent claim 11, which is now canceled. In support of the rejection of dependent claim 11, the Office Action stated that it is well known in the art to utilize thresholds to modify parameters to provide various control functions with easy-to-implement circuits and, therefore, reasoned that it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify Kotowski's invention by providing pulse skipping inhibition when the battery voltage exceeds a threshold. Applicant disagrees with this analysis.

Applicant generally disagrees with the application of the statement that "it is well known in the art to utilize thresholds to modify parameters to provide various control functions" to the rejection of the claims. This statement of knowledge in the art is vague and does not provide any specific reasons why inhibiting pulse skipping when a level of a battery voltage exceeds a threshold voltage would have been well-known to those of ordinary skill in the art at the time of invention. Furthermore, it is unclear why one of ordinary skill in the art at the time of the invention would have been motivated to modify Kotowski to inhibit pulse skipping when a level of battery voltage exceeds a threshold voltage.

[23] *Id.* at col. 3, ll. 36-44.

As previously described, Kotowski discloses inhibiting pulse skipping when the output voltage of the switched capacitor circuit is less than a desired output voltage and activating pulse skipping when the output voltage exceeds the desired output voltage.[24] Kotowski is concerned with maintaining a lower gain setting of the switched capacitor circuit for a longer period of time in order to increase efficiency of the switched capacitor circuit.[25] Therefore, Kotowski only considers activation or inhibition of pulse skipping based on an output voltage of a switched capacitor circuit, which provides gain to an unregulated input voltage.[26] Modification of Kotowski to inhibit pulse skipping when a level of battery voltage exceeds a threshold voltage would serve no apparent purpose. For at least these reasons, Kotowski does not provide any suggestion of inhibiting pulse skipping when a level of battery voltage exceeds a threshold voltage, as recited by claim 1. As established above, Lebel also fails to disclose or suggest the control circuit recited in claim 1. Accordingly, claim 1 is patentable over Kotowski in view of Lebel.

For at least the reasons discussed above with respect to independent claim 1, Kotowski in view of Lebel also fails to disclose or suggest a method comprising applying a battery voltage to a boost converter to convert the battery voltage to an operating voltage for the programmer and inhibiting pulse skipping by the boost converter when a level of the battery voltage exceeds a threshold voltage, as recited by independent claim 18. In addition, for at least the reasons discussed above with respect to independent claim 1, independent claims 35 and 51 are patentable over Kotowski in view of Lebel.

Dependent claims 2-10, 12-17, 19-27, 29-34, 36-43, 45-51, and 53-59 are also patentable over Kotowski in view of Lebel. For example, with respect to dependent claims 4, 21 and 38, Kotowski fails to disclose or suggest transmitting a battery voltage to a boost converter via a transistor and turning the transistor OFF when the battery voltage exceeds a threshold voltage. The Office Action stated that because Kotowski discloses a system in which a battery voltage enforces a minimum gain, which is determined by the transistor-based switching of the switched

[24] *Id.* at col. 3, ll. 16-18 and ll. 26-35.
[25] *Id.* at col. 3, ll. 36-47.
[26] *Id.* at col. 3, ll. 10-16.

capacitor circuit, Kotowski meets the language of claims 4, 21, and 38.[27] Applicant respectfully disagrees.

Kotowski does not disclose or suggest turning a transistor OFF when the battery voltage exceeds a threshold, as required by claims 4, 21, and 38. Contrary to the Office Action's interpretation of Kotowski, Kotowski does not change the transistor switching of a switched capacitor circuit based on a minimum gain. The minimum gain is merely a limitation on how low the switched capacitor circuit may decrease the gain.[28] The actual gain setting may be higher than the minimum gain and is determined based on the output voltage of the switched capacitor circuit. More specifically, when the output voltage exceeds the desired output for a specified number of pulses in a row, the gain is decreased.[29] Therefore, the transistor is not turned OFF based on battery voltage, e.g., when a battery voltage exceeds a threshold. Instead, the gain adjustments and, therefore, the transistor configurations are controlled by the output voltage of the switched capacitor circuit.

With respect to claims 13, 30, 46 and 54, the applied references also fail to disclose or suggest inhibiting pulse skipping by the boost converter by limiting the level of the battery voltage applied to the boost converter. The Office Action found that FIG. 5 of Kotowski discloses the limitations of claims 13, 30, 46, and 54.[30] As illustrated in FIG. 3 of Kotowski, the switched capacitor array 310 is a component of DC-DC converter 300 and an input voltage from a battery is input to the switched capacitor array 310.[31] Kotowski does not disclose or suggest that the level of battery voltage inputted into converter 300 may be limited. Instead, Kotowski discloses that capacitor array 310 within converter 300 merely receives the input voltage from the battery. While the gain of capacitor array 310 within converter 300 may be adjusted, Kotowski does not disclose that the level of battery voltage inputted into converter 300 may be limited. FIG. 5 illustrates another embodiment of a capacitor array, and similarly fails to illustrate that the input voltage Vin for the capacitor array may be limited.

[27] Office Action dated 9/10/07, page 6, item 17.
[28] Kotowski at col. 3, ll. 3-5.
[29] *Id.* at col. 3, ll. 37-43.
[30] Office Action dated 9/10/07, page 6, item 18.
[31] Kotowski at FIG. 3 and col. 5, ll. 23-28.

For at least these reasons, the Office Action has failed to establish a prima facie case for non-patentability of Applicant's claims 1-10, 12-27, 29-43, 45-51 and 53-59 under 35 U.S.C. § 103(a). Withdrawal of this rejection is respectfully requested.

CONCLUSION

All claims in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims.

In view of the clear distinctions identified above between the current claims and the applied prior art, Applicant reserves further comment at this time regarding any other features of the independent or dependent claims. However, Applicant does not necessarily admit or acquiesce in any of the rejections or the Examiner's interpretations of the applied references. Applicant reserves the right to present additional arguments with respect to any of the independent or dependent claims.

Please charge any additional fees or credit any overpayment to deposit account number 50-1778. The Examiner is invited to telephone the below-signed attorney to discuss this application.

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